The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte JOSEPH RAYMOND FARYNIARZ, ANTHONY WILLIAM JOHNSON, MICHAEL CHARLES CHENEY, and TIMOTHY MICHAEL ANTO

Appeal 2006-3254
Application 10/347,982
Technology Center 1600

ON BRIEF

Before ADAMS, GRIMES, and GREEN, *Administrative Patent Judges*.

GRIMES, *Administrative Patent Judge*.

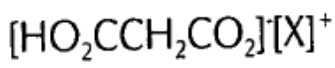
DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims to a composition comprising malonic acid salts. The Examiner has rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

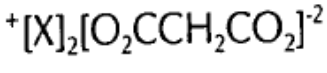
BACKGROUND

The specification describes a cosmetic composition comprising a mono-hydroxy substituted amine salt of malonic acid and a cosmetically acceptable carrier. (Specification 3.) "These salts may either be partially or

fully neutralized carboxylic salts as represented by general formulas (I) and (II):



I



II

wherein X is a protonated salt of a mono-hydroxy substituted amine." (*Id.* at 4.) The active ingredient can be "salt I, salt II or mixtures of these salts. When mixtures are present the molar ratio of mono-salt I to di-salt II may range from about 1000:1 to about 1:1000." (*Id.* at 6.) The most preferred mono-hydroxy amine is dimethylaminoethanol (DMAE). (*Id.* at 5.)

DISCUSSION

1. CLAIMS

Claims 1, 2, 4-8, 10, and 11 are on appeal. Claim 9 is also pending but has been withdrawn from consideration by the Examiner.

For each rejection, the claims have been argued as a group. Thus, the claims of each rejection stand or fall together. 37 C.F.R. § 41.37(c)(1)(vii). We will focus on claims 1 and 8, which are representative and read as follows:

1. A cosmetic composition comprising:

   (i) from about 0.0001 to about 30% by weight of a mono-hydroxy substituted amine salt of malonic acid present as a half neutralized and a fully neutralized acid in a molar ratio ranging from about 1000:1 to about 1:1000, respectively; and

   (ii) from about 1 to about 99.9% by weight of a cosmetically acceptable carrier.

8. A dimethylaminoethanol salt of malonic acid wherein the malonic acid is present as a half neutralized and a fully neutralized acid in a molar ratio ranging from about 1000:1 to about 1:1000, respectively.

Thus, claim 1 is directed to a cosmetic composition comprising a specified amount of a mono-hydroxy substituted amine salt of malonic acid and a specified amount of a cosmetically acceptable carrier. Claim 8 is directed to a dimethylaminoethanol salt of malonic acid. In both of claims 1 and 8, malonic acid is present as half neutralized acid and as fully neutralized acid in a specified molar ratio.

2. JOKURA WITH GÜNTER

Claims 1, 4, and 5 stand rejected under 35 U.S.C. § 103 as obvious over Jokura[1] in view of Günter.[2] The Examiner argues that Jokura "teaches a skin cosmetic causing little irritation and having an excellent moisturizing effect that comprises a salt of a dicarboxylic acid (see abstract . . .)"; that a "suitable dicarboxylic acid comprises malonic acid"; "that the salt can comprise an alkanolamine salt or an ammonium salt (see column 3, lines 30-50 . . .)"; "that the dicarboxylic acid content in the solution is preferably from 0.1 to 20% by weight, with a molar ratio of dicarboxylic acid to dicarboxylic acid salt of from 1:9 to 9:1 (see column 3, lines 35-60, in particular), which closely overlaps with the malonic acid salt weight ranges recited in the claim"; and "that the cosmetically acceptable carriers of water, ethanol and water-soluble polyhydridric [sic, polyhydric] alcohols may be provided in the cosmetic in a content of from 0.1 to 90% by weight

[1] Jokura et al., U.S. Patent No. 5,641,495, issued June 24, 1997.
[2] Günter, U.S. Patent No. 4,675,180, issued June 23, 1987.

(see column 4, lines 28-35, in particular), which meets the limitation of being from 'about' 1 to 'about' 99.9% by weight." (Answer 4.)

The Examiner also argues that Jokura "teaches that the di-carboxylic acid salt may be formed by adding an alkali to the composition following the addition of an acid to the composition, thereby forming the salt via neutralization in the system (see column 3, lines 45-50.)" (Answer 5.) The Examiner concludes that "the dicarboxylic acid salts in the composition of Jokura et al. must comprise a mixture of both fully neutralized and half neutralized acid, as the addition of alkali to the acid will result in a composition having some content of both the fully and partially neutralized acid." (*Id.*)

In particular, the Examiner argues that "'free acid,' 'partially neutralized' acid (formula I), and 'fully neutralized[']' acid (formula II), exist in solution in equilibrium with one another, with the concentration of the different forms being governed by the individual K_a of each 'neutralization' reaction." (Answer 14.) "[T]he ratio of partially neutralized acid to fully neutralized acid will be dependent upon the concentration of H+ in solution. In other words, the ratio of partially neutralized to fully neutralized acid is governed by the pH of the solution." (Answer 16 (emphasis in original).) Thus, the Examiner concludes that "solutions having the same pH should have the same or similar ratios of partially neutralized to fully neutralized salts." (*Id.*)

In addition, the Examiner notes that Jokura "teaches that a desirable pH range is from 3 to 10 and preferably from 3 to 9, and exemplifies compositions having a pH of 4.1 (see column 3, lines 60-65 and Table 2)"

and that these ranges encompass or overlap "with Appellants preferred pH of from about 4 to about 7." (Answer 17.) The Examiner concludes that "as Jokura et al. teaches a pH range that meets and/or overlaps with the range . . . used by Applicants to achieve a ratio of partially to fully neutralized salt, it is considered that the composition of Jokura et al. does have an amount of 'fully neutralized' acid salt form present in the solution." (*Id.*)

The Examiner also argues that it would have been obvious "to vary and/or optimize the pH and/or the ratio of salt form to free acid form as taught by Jokura et al. (column 3, lines 50-65) and thus simultaneously vary and/or optimize the ratio of partially neutralized to fully neutralized salt." (Answer 17.)

The Examiner states that Jokura "does not specifically teach that the salt of malonic acid is a mono-hydroxy substituted amine salt." (Answer 6.) However, the Examiner states that "Günter teaches compounds that are suitable for use in cosmetics comprising quaternary ammonium salts of acids, wherein the ammonium salt is mono-hydroxy substituted (see abstract and formula (1) . . .)," and "that the mono-hydroxy substituted quaternary salts can be formed with an organic acid, such as a di-carboxylic acid having from 1 to 4 carbon atoms (see column 2, lines 15-28 . . .)." (Answer 6.) The Examiner concludes that "one of ordinary skill in the art would have been motivated to provide [the] quaternary mono-hydroxy substituted ammonium salts of Günter et al. as the salts of malonic acid in the cosmetic composition of Jokura et al, with [the] expectation of providing a quaternary mono-hydroxy substituted ammonium salt of a malonic acid that is suitable for cosmetic use." (Answer 7.)

We conclude that the Examiner has set forth a prima facie case that the composition of claim 1 would have been obvious. Jokura describes a skin cosmetic comprising a ceramide or pseudoceramide, a dicarboxylic acid, and a salt of a dicarboxylic acid (col. 2, ll. 6-39), and specifically identifies malonic acid as an example of a dicarboxylic acid (col. 3, ll. 33-37). Jokura states that preferably "the total content of [the dicarboxylic acid] and [dicarboxylic acid salt], in terms of the acid, in the skin cosmetic . . . falls within a range of from 0.01 to 20% by weight" and "the molar ratio of the [dicarboxylic acid] to [dicarboxylic acid salt] falls within a range of from 1/9 to 9/1." (Col. 3, ll. 51-60.) Jokura also describes including water, ethanol, or water-soluble polyhydric alcohols as a base and that the preferred content of these components in the skin cosmetic "ranges from 0.01 to 95% by weight, still [more] preferably from 0.1 to 90% by weight." (Col. 4, ll. 16-34.)

Jokura does not state that malonic acid is present as a half neutralized acid and as a fully neutralized acid in a molar ratio ranging from about 1000:1 to about 1:1000, respectively. However, Jokura describes regulating "the pH value of the skin cosmetic . . . to pH 3 to 10, still [more] preferably to pH 3 to 9," and exemplifies a pH of 4.1. (Col. 3, ll. 60-65, & Table 2.)

The Examiner has asserted that "the ratio of partially neutralized acid to fully neutralized acid will be dependent upon the concentration of H+ in solution," and has supported this assertion with scientific reasoning. (Answer 16.) Appellants' specification states that "[c]ompositions of this invention may have a pH ranging from about 2.5 to about 8.5, preferably from about 3 to about 8, optimally from about 4 to less that about 7."

(Specification 6.) These ranges are encompassed by or substantially overlap with the ranges described in Jokura. Therefore, we conclude that the Examiner has set forth a prima facie case that it would have been obvious to vary the pH of the composition within the range described in Jokura and that such variation would result in compositions having a molar ratio of half to fully neutralized acid of from about 1000:1 to about 1:1000.

Jokura also does not appear to specifically describe a mono-hydroxy substituted amine salt. However, Jokura does state that "[e]xamples of the dicarboxylic acid salt include . . . alkanolamine (for example, triethanolamine) salts . . . and ammonium salts." (Col. 3, ll. 40-45.)

In addition, Günter describes quaternary ammonium salts including a hydroxy ethylene group. (Col. 1, ll. 35-53.) Günter describes forming the quaternary ammonium salts "by quaternising tertiary amines in an aqueous medium in the presence of acid with ethylene oxide." (Col. 1, ll. 38-40.) Günter states that the acid can be "organic acids, for example low molecular weight mono-, di- or tri-carboxylic acids having, for example 1 to 6 . . . carbon atoms, such as . . . oxalic acid, [which is a dicarboxylic acid]. . . . Accordingly, [the anion of the salt] is, for example, . . . oxalate." (Col. 2, ll. 15-26.) Günter also states that these compounds are "suitable . . . for use in hair cosmetics." (Col. 3, ll. 3-5.) We conclude that one of ordinary skill in the art would have been motivated to use the quaternary ammonium compounds described in Günter as the cation of the dicarboxylic acid salt described in Jokura.

Appellants argue that Jokura "discloses the unneutralized acid (component B) and the partially neutralized acid (component C). The free

acid can only co-exist with a partially neutralized salt because of pKa considerations. There is thus no disclosure of a fully neutralized malonic acid." (Br. 6.) In traversing the rejection over Jokura in view of Cole discussed below, Appellants argue that "[d]ifferences in pKa would have any alkali first neutralize free acid before it would double neutralize both carboxylic functions." (Br. 11.) Appellants also argue that Günter does not describe malonic acids or "mixed mono- and di-salts of dicarboxylic acids." (Br. 8.) Thus, Appellants argue that neither reference "disclose[s] mixtures of partially and fully neutralized malonic acid." (*Id.*)

We are not persuaded by this argument. We find that the Examiner has set forth adequate scientific reasoning to support the conclusion that Jokura discloses mixtures of partially and fully neutralized acid.

In particular, the Examiner argues that "the 'free acid,' 'partially neutralized' acid (formula I), and 'fully neutralized[']' acid (formula II), exist in solution in equilibrium with one another, with the concentration of the different forms being governed by the individual K_a of each 'neutralization' reaction." (Answer 14.) In support of this position, the Examiner points to equilibrium equations that are well known in the art, as evidenced by the attached excerpt from a Chemistry textbook.[3] These equations support the Examiner's conclusion that malonic acid, at pHs in the range disclosed by Jokura, provides a solution containing "fully neutralized acid" and "partially neutralized acid" in equilibrium with one another ("fully neutralized acid"/"partially neutralized acid" = $K_{a2}/[H^+]$) and "partially neutralized acid"

[3] Ronald J. Gillespie et al., *Chemistry* 516-520, 524-525, & 550-551 (1986) (copy attached).

and "free acid" in equilibrium with one another ("partially neutralized acid"/"free acid" = $K_{a1}/[H^+]$) and therefore provides a solution containing "fully neutralized acid," "partially neutralized acid," and "free acid."

Appellants provide no support for their allegations that "free acid can only co-exist with a partially neutralized salt" and that "[d]ifferences in pKa would have any alkali first neutralize free acid before it would double neutralize both carboxylic functions." We conclude that these unsupported allegations are insufficient to rebut the Examiner's prima facie case that claim 1 would have been obvious.

In addition, Appellants argue that their invention "is directed at combating the signs of skin aging" and that they "have discovered that certain salts of malonic acid control [the] formation of fine lines, wrinkles, sagging, tone and age spots." (Br. 6.) In particular, Appellants state that Example 1 of their application shows "that a malonate salt mixture was as effective as the well known alpha-hydroxy (ammonium glycolate) product." (*Id.*)

In contrast, Appellants argue, Jokura "is focused upon achieving moisturization. There is no suggestion that their compositions or any of their components can treat the signs of aging." (*Id.*) In addition, Appellants argue that Günter does not remedy this deficiency. (Br. 8.)

Appellants also argue that "[n]o one had expected a non-alpha-hydroxy acid to have any anti-aging effect." (Br. 6.) "[I]t was an extraordinary discovery that malonic acid salts (which do not have . . . an alpha-hydroxy group) were found to be as effective." (Br. 9.) In addition,

Appellants argue that the "even more significant advance is the relatively non-irritating nature of the malonate salts." (*Id.*)

We are not persuaded by these arguments. We note initially that whether Jokura or Günter describes treating the signs of aging is not relevant to whether the Examiner has set forth a prima facie case of obviousness. Prima facie obviousness does not require prior art references to recognize or even suggest the problem that Appellants attempted to solve. In addition, the prior art does not have to teach combining references for the reason that Appellants combined them. *In re Dillon*, 919 F.2d 688, 692-93, 16 USPQ2d 1897, 1901 (Fed. Cir. 1990, en banc).

In addition, we conclude that Appellants have not set forth sufficient evidence of unexpectedly superior results to rebut the prima facie case that claim 1 would have been obvious. In particular, Appellants have not shown that the claimed composition has unexpectedly superior results as compared to the closest prior art. "[W]hen unexpected results are used as evidence of nonobviousness, the results must be shown to be unexpected compared with the closest prior art." *In re Baxter-Travenol Labs.*, 952 F.2d 388, 392, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991).

We conclude that the Examiner has set forth a prima facie case that claim 1 would have been obvious over Jokura in view of Günter, which Appellants have not rebutted. We therefore affirm the rejection of claim 1 under 35 U.S.C. § 103. Claims 4 and 5 fall with claim 1.

3. JOKURA WITH COLE

Claims 1, 2, 4-8, 10, and 11 stand rejected under 35 U.S.C. § 103 as obvious over Jokura in view of Cole.[4] The Examiner substantially repeats the arguments regarding Jokura that were raised in the rejection above. (Answer 7-10.) In addition, the Examiner states that Cole "teaches a topical composition for the treatment of skin comprising an alkanolamine salt of an organic acid (see abstract and paragraphs 0011 through 0020 . . .)"; "teaches that the alkanolamine salt can be formed with any organic acid known to be useful in skin care compositions (see paragraph 0020 . . .)"; and "exemplifies providing dimethylaminoethanol (DMAE) . . ., which is [] a mono-hydroxy substituted amine salt." (Answer 10.) The Examiner concludes that "one of ordinary skill in the art would have been motivated to provide alkanolamine salts of Cole et al. as the salts of malonic acid in the cosmetic composition of Jokura et al, with [the] expectation of providing a malonic acid salt that is suitable for cosmetic compositions." (Answer 10-11.)

We conclude that the Examiner has set forth a prima facie case that claim 1 would have been obvious. We discuss Jokura above. Cole describes using alkanolamine salts "to reverse or diminish the effects of aging on the skin." (¶16.) As a preferred alkanolamine salt, Cole lists an acid salt of dimethylaminoethanolamine (¶19), which is the mono-hydroxy substituted amine recited in, for example, claim 2. In addition, Cole states that "[s]uitable acids for use in the preparation of the alkanolamine salts . . .

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[4] Cole et al., U.S. Patent Publication No. 2003/0095991 A1, published May 22, 2003.

include any organic acid known to be useful in skin care compositions." (¶20.) We conclude that one of ordinary skill in the art would have been motivated to use the alkanolamines described in Cole as the cation of the dicarboxylic acid salt described in Jokura.

Appellants traverse this rejection for substantially the same reasons that they traverse the rejection over Jokura in view of Günter. We are unpersuaded by these arguments for the reasons discussed above.

Appellants also argue that Jokura "mentions malonic as one of a series of dicarboxylic acids. It has not been singled out." (Br. 13.) In addition, Appellants argue that "[m]alonic acid is not disclosed in Cole et al. This reference focuses upon forming salts with alpha-hydroxycarboxylic acids." (Br. 12.)

We are not persuaded by these arguments. Although Jokura does not exemplify a composition in which the dicarboxylic acid salt is a malonic acid salt, Jokura lists malonic acid among a list of only eight dicarboxylic acids. (Col. 3, ll. 31-37.) Thus, we conclude that the Examiner has set forth a prima facie case that a composition containing a malonic acid salt would have been obvious based on the teachings of Jokura.

We conclude that the Examiner has set forth a prima facie case that claim 1 would have been obvious over Jokura in view of Cole, which Appellants have not rebutted. We therefore affirm the rejection of claim 1 under 35 U.S.C. § 103. Claims 2, 4-8, 10, and 11 fall with claim 1.

4. HAAS

Claims 8 and 11 stand rejected under 35 U.S.C. § 103 as obvious over Haas.[5] The Examiner states that Haas "teaches a process for producing pressed materials such as wood particle boards, wherein ammonium salts from the reaction of amines with malonic acid are used as catalysts (see abstract . . .)"; "teaches forming the dimethylaminoethanol salt of malonic acid as an activator"; and "teaches forming the salts by combining sufficient quantities of the amines with malonic acid to provide a desired molar ratio, such as 2 moles of amine per 1 mole of malonic acid (see column 6, line 60 through column 7, line 20 . . .)." (Answer 11.)

The Examiner states that Haas "does not specifically teach that the malonic acid salt has a ratio of half-neutralized to fully neutralized acid" in the range recited in claim 8. (*Id.*) However, the Examiner concludes that:

> as Haas et al. provides instructions for forming the malonic acid salt, and furthermore instructs the amount of the reactants that can be combined in molar ratios, it is considered that one of ordinary skill in the art at the time the invention was made would have found it obvious to vary and/or optimize the molar ratios of the reactants to provide a product having a [claimed] mixture of fully and partially neutralized salt.

(Answer 11-12.)

Appellants argue that Haas "provides no disclosure with respect to a half-neutralized acid salt. . . . The Examiner has not set forth a *prima facie* case of obviousness." (Br. 11.)

We agree with Appellants that the Examiner has not provided a prima facie case that the salt of claim 8 would have been obvious over Haas. One

[5] Haas et al., U.S. Patent No. 6,007,649, issued December 28, 1999.

of ordinary skill in the art may have known how to alter the amount of reactants to provide a salt having the claimed ratio. However, the Examiner has not set forth adequate basis for the conclusion that one of ordinary skill in the art would have been motivated to alter the amount of reactants to provide such a salt. "Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1316-17 (Fed. Cir. 2000).

The Examiner has not shown that claim 8 would have been obvious to a person of ordinary skill in the art based on Haas. Claim 11 depends from claim 8. We therefore reverse the rejection of claims 8 and 11 under 35 U.S.C. § 103 over Haas.

SUMMARY

We reverse the rejection of claims 8 and 11 under 35 U.S.C. § 103 as obvious over Haas. However, we affirm the rejections under 35 U.S.C. § 103 of claims 1, 4, and 5 as obvious over Jokura in view of Günter and of claims 1, 2, 4-8, 10, and 11 as obvious over Jokura in view of Cole.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

Donald E. Adams Administrative Patent Judge	)
	) BOARD OF PATENT
Eric B. Grimes Administrative Patent Judge	) APPEALS AND
	) INTERFERENCES
Lora M. Green Administrative Patent Judge	)

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